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ABSTRACT

This study was conducted to determine whether changes from traditional organizational patterns in elementary schools make a difference in reading achievement. The study was conducted through comparisons of student populations in three suburban schools. Two schools were experimental (one nongraded, one open space), and the third was a traditional model. Standardized tests were given annually to all students, and comparisons were made of test scores. The longitudinal study followed students through their elementary school experience. Results show that students in schools with innovative design do better in reading achievement overall. The findings show that these students do as well or better on standardized reading tests and that the longer students are in experimental settings the greater the benefit they receive. The study concludes that experimental settings are conducive to reading achievement and supports the viability of these organizational concepts in elementary schools. (MD)

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SCHOOL ORGANIZATIONAL PATTERNS

AND

READING ACHIEVEMENT

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Purpose of the Study

Many school systems during the past two decades have experimented with various forms of organizational patterns in the elementary school. Practitioners were seeking alternatives to the more traditional educational mode in order to improve upon cognitive and affective outcomes for children. There were considerable changes taking place in schools throughout the nation in a movement which appeared to be attempting to revolutionize American education (Miller, 1967). More sweeping changes were being proposed at the elementary level than at any other, apparently because reforms made in elementary schools would yield greater dividends than those at higher levels, given the same investment of educational time, talent and money. As Heathers (1971, p.21) points out:

> The critics and reformers find fault with virtually every aspect of elementary education and call for fundamental changes in the curriculum, in learning materials and media, in teaching methods, in organization for instruction, and in the education of teachers. In all these areas, numerous innovations have been developed and put to test in the schools. Some already have been adopted widely, notably modern mathematics curricula, educational television, nongraded plans, and team teaching.

Foremost among the reasons for reform were the concerns in providing for individual differences. Accordingly, educational change implemented included teacher education, new technology, and school re-organization. All the changes in organizational patterns were developed for the purpose of improving the quality of instruction with a greater emphasis given to adapting learning to individual differences and fostering individualization of instruction (Doll, 1964).

The purpose of this study was to determine whether these changes from traditional organizational patterns in an elementary school make a difference in reading achievement. The study analyzed the results of reading achievement in terms of an experiment in a suburban school district located in Fairfield, Connecticut which had adopted an innovative organizational pattern in some of its schools.

In order to determine if these innovative organizational patterns had an effect on the reading achievement of the student population in these schools, comparisons were made between the reading achievement of the student populations in two innovative schools and between each of them and the achievement of a school which was organized on the traditional model. The study was a longitudinal study which included comparisons of reading achievement of three populations of students, year by year, throughout their elementary school experience - one population which attended a school organized on a nongraded model, one population which attended a school organized on an open space model, and one population which attended a school organized on the traditional model. A brief description of the three schools with different organizational patterns used in this study follows.

Nongraded School

One school in the district used in this study was organized with a nongraded organizational pattern. The nongraded program was first implemented in 1973 at which time the staff, seeking an alternative to the traditional lock-step, grade-by-grade organizational design, decided to change to nongraded in order to facilitate a more individualized instructional program without the constraints of the traditional graded program.

Following a year of study and research including visits to other school districts which used a nongraded approach, the program was implemented in the primary grades. The following year, the program was extended to include the older students in the intermediate grades at which time the entire school became nongraded. The nongraded organizational plan implemented over a two-year period had no grade designations; instead the curriculum was defined in stages or levels of learning for each of the basic skill subjects. Teachers in the school had developed these levels of learning in basic skill areas prior to the time the program was implemented.

The levels of learning, commonly referred to as scope and sequence guides, listed skills in the basic skill subjects that were expected to be mastered by children as they progressed through the school during their elementary years. Children were instructed at their own ability levels and allowed to proceed at their own pace. When children demonstrated mastery of one level of learning, they were allowed to move to the next level. Individualization was achieved in that although pupils proceeded through the same material, they did so at their own rate and in a manner which was most conducive to their individual learning styles.

Open Space School

Open space schools and open education classrooms are often erroneously equated and confused with each other. The open space school used in this study refers to a physical facility composed of instructional areas without interior walls. The school was constructed in the late nineteen sixties to accommodate a student population of approximately six hundred. Originally, the school's only open space area was concentrated in one section of the building where movable partitions were installed to permit combining of classroom activities. The dividing walls in the primary wing were removed in the early seventies at which time the open space design was extended to include grades one through four.

Prior to the implementation of the open space program, the principal and staff spent one year of extensive study and review of open space programs. The philosophy of the staff was based on a commitment to individualized instruction and open environment concepts. Brochures developed by the staff about the open space program stressed the concept of classrooms without walls and a belief that a pressure-lessened atmosphere in the school would result in more positive affective outcomes for the child. The philosophical rationale was based on the premise that the school should provide a less structured, more home-like learning environment.

The staff in the open space area of the school which accommodated grades one through four functioned quite differently from their intermediate counterparts situated in another section of the building in self-contained classrooms.

The staff in the open space area worked as an instructional team where their teaching efforts were coordinated. There was considerable movement and flexibility in grouping practices as children were able to cross grade lines, room lines and exchange teachers during reading and language arts instructional time.

Traditional Self-Contained School

The traditional self-contained elementary school used in this study is located in one of the more affluent neighborhoods in the community. Its socio-economic level could best be described as middle to upper middle class with the parents of the children who attended this school mostly from various types of professional occupations. This school, constructed in the late sixties, was one of the newer elementary schools in the town. When the school was completed, most of the staff from the two older elementary schools in the immediate neighborhood which closed were transferred to the new school.

The school upon its opening basically adhered to the traditional curriculum of the school district. The textbooks for the different subject areas adopted by the district were the ones which were used by the staff and students. Each teacher in the school was required to teach all subjects with a specified amount of time as outlined in the teacher's policy handbook to be devoted to each subject every school day. Teachers were held accountable for the amount of time they taught each subject in the curriculum and every week were required to submit this information along with their weekly plan books to the building administrator.

Classrooms for the most part were self-contained with children remaining with their assigned homeroom teacher for the major part of the school day except for special subjects such as art, music, physical education and library where specialists in these areas assumed teaching responsibility. Children were grouped for instructional purposes in basic skill areas of reading and math within each classroom. Individualization of instruction was provided through grouping of pupils based upon achievement levels. There was a minimum of team teaching and shared teaching, especially in primary grades. Movement of children from classroom to classroom and exposure to more than one teacher was limited. Parents, staff and students in the traditional self-contained school were achievement oriented and placed considerable value and emphasis on grades and achievement test scores.

The study sought answers to three basic questions:

1. Were there differences in reading achievement of the three student populations attending elementary schools operating with three different organizational models?

2. If differences in gains are discovered among the three populations, can they be attributed to different operational procedures and teaching strategies among the teachers in the three schools?

3. How do the explanations relate to the organizational models?

Methodology

The student population included in the study in the first year involved 190 first grade students. This number constituted the total first grade population of the three schools participating in the study. There were 71 first grade students in the nongraded school, 64 students in the open space school and 55 students in the traditional self-contained school.

At the completion of the study, there were 114 students or 60 percent of the original first grade students who had remained in their respective schools for the full six years. The attrition rate of 40 percent represented those students who either had moved or were retained at some period during their elementary school experience. Only those students who had remained with the program for the full six years the study was being conducted were included in the data analysis.

At the completion of the study in grade six, there were 32 students in the nongraded school, 44 students in the open space school and 38 students in the traditional self-contained school.

The mean age at the time the sixth grade IQ tests were administered was 11.05 for students in the nongraded school, 11.05 for students in the open space school and 11.04 for students in the traditional school. The mean IQ for students in the nongraded school was 108.59, 108.55 for students in the open space and 115.11 for students in the traditional school.

The Gates-MacGinitie Reading Achievement Tests in the areas of vocabulary and comprehension were administered to all students in the study on an annual basis during the month of May. The Primary A tests were administered to first grade students in the first year of the study, Primary B to second grades in the second year, Primary C to third grades in the third year and Survey D to fourth, fifth and sixth grades in the fourth, fifth and sixth years of the study.

The Cognitive Abilities Test was selected for the study because it was normed jointly with the Gates-MacGinitie Reading Tests. The comparability of the norming population for the two instruments used in the study facilitated comparing students' performance on the reading achievement tests with their performance on the aptitude test. Although aptitude tests were administered to all students in the study at earlier grade levels, only the sixth grade test scores were used because of the acknowledged belief that aptitude test scores are more reliable in older subjects.

Major Findings

The results in response to the first hypothesis regarding reading differences was a year-by-year or grade-by-grade comparitive analysis of reading achievement test scores which used analysis of variance and correlation analysis as statistical techniques in analyzing the data. We analyzed achievement test data in the areas of reading comprehension (Table 1) and reading vocabulary (Table 2).

In the analysis of reading comprehension, we found significant differences in grade one among the students from the three schools with the students in the traditional setting scoring higher than those students in the experimental settings. We found this to be true in the area of reading vocabulary as well for grade one. In the area of reading comprehension, we did not find any significant differences in grades 2 through 6. Although significant differences

did exist in the first year, these differences were minimized considerably in later years.

It should also be noted for the purpose of this study that students in the traditional setting had a higher IQ mean, approximately 115 as compared to 108 for students in the experimental schools. Despite the IQ differential, differences in achievement test scores in later years were minimized considerably. This is one of the major findings of the study.

The results in response to the second hypothesis in regard to whether reading gains were discovered utilized covariance and regression analysis in analyzing the data. Reading gains were analyzed on a year-to-year basis as well as over the six-year period of time the study was conducted. Actual test scores of students were analyzed in relation to their predicted scores (Tables 3 and 4).

The results indicated that students from the traditional school in the first year of the study scored above predicted achievement whereas students from the experimental settings scored below predicted achievement. However, in analyzing the data over the six-year period, we find that students in the experimental schools had made net gains in their reading achievement. In the traditional school, we found a downward trend of test scores in terms of actual achievement as compared to predicted achievement. This downward trend was most noticeable in the case of reading comprehension where students in the traditional school fell below the predicted achievement in their sixth year.

The two groups of students which appeared to have been influenced the most from the duration of exposure in their respective settings were the males in the nongraded school and females in the open space school. Both groups achieved higher than predicted in their sixth year in the area of reading comprehension.

Based upon what you might expect from the IQ differential, one would think that the students in the traditional school would continue to be superior throughout the six-year time period the study was conducted, but they are not. Even though they had the IQ superiority going for them, they did not outpace the other groups and the students in the experimental settings did not lose out in terms of reading achievement. This is another major finding of the study.

In regard to the third hypothesis as to what accounted for differences, i.e., how do the explanations relate to the organizational models, there were four important variables that were found to be quite influential in terms of reading achievement. These variables were determined through the use of a questionnaire (with representative items noted after Table 4) which was administered to key people involved with the study. The four variables found to be influential were (1) flexibility in grouping practices, (2) flexibility in teaching strategies and methods among the teachers in the experimental schools, (3) record keeping practices, and (4) teacher commitment.

Conclusions

The major conclusions of the study are as follows:

1. Comparisons of the reading achievement test scores favored the students in the nongraded and open space schools.

2. In spite of the fact that the instruments used to measure achievement are often standardized on students in traditionally structured schools, the findings of this study indicate that students in the nongraded and open space schools did as well, or better, on standardized reading tests than their counterparts in the traditional setting.

3. Duration of exposure was an important component of the study in that the longer students are in these experimental settings, the greater the benefits.

4. Where emphasis is given to individualization of instruction and appropriate pacing, average and below-average students benefit in terms of reading achievement.

5. The results of this study indicate that these experimental settings are conducive to reading achievement and support the viability of these organizational concepts in elementary schools and parents and teachers need not be concerned that these experimental settings will be detrimental to reading achievement.

Table 1

Comparison of Achievement in Comprehension by School Setting, Grade and Gender (Standardized Scores)

		IQ	Age (at time of IQ testing)	Comprehension Achievement by Grade Level: Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
School 1 N=32 (Nongraded)	Mean	108.59	11.05	50.41	54.13	54.09	50.13	53.69	53.75
	SD	10.86	.64	7.44	8.57	5.47	7.03	7.14	6.32
Male	Mean	109.07	11.07	49.21	52.36	53.50	50.79	54.43	54.50
	SD	12.83	.71	7.42	10.07	6.65	6.03	8.44	7.63
Female	Mean	108.22	11.04	51.33	55.50	54.56	49.61	53.11	53.17
	SD	9.43	.58	7.52	7.21	4.50	7.86	6.14	5.24
School 2 N=44 (Open Space)	Mean	108.55	11.05	54.00	53.73	54.61	52.82	54.05	56.19
	SD	13.16	.48	8.49	8.76	9.05	8.61	10.95	8.41
Male	Mean	108.94	11.04	51.94	53.94	52.75	51.94	52.81	55.06
	SD	15.24	.49	8.01	9.62	9.56	9.29	12.00	9.19
Female	Mean	108.32	11.05	55.18	53.61	55.68	53.32	54.75	56.82
	SD	12.11	.48	8.67	8.42	8.74	8.33	10.46	8.03
School 3 N=38 (Traditional)	Mean	115.11	11.04	57.92	54.74	55.37	54.00	57.24	55.00
	SD	15.86	.54	6.59	9.33	8.34	7.71	9.98	7.74
Male	Mean	116.28	11.05	57.17	54.67	54.22	53.39	58.44	56.00
	SD	18.52	.55	8.66	10.96	10.01	9.06	12.24	7.83
Female	Mean	114.05	11.04	58.60	54.80	56.40	54.55	56.15	54.10
	SD	13.31	.49	4.04	7.89	6.59	6.44	7.58	7.75
F Ratios/School Comparisons (df=2,108)				*** 8.76	.15	.28	2.13	1.46	.95

*** $p < .001$

Note: Top row of figures for each category refers to means; second row of figures for each category indicates standard deviation

Table 2

Comparison of Achievement in Vocabulary by School Setting, Grade and Gender (Standardized Scores)

		IQ	Age (at time of IQ testing)	Vocabulary Achievement by Grade Level: Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
School 1 N=32 (Nongraded)	Mean	108.59	11.05	53.12	55.53	53.91	53.19	57.09	53.43
	SD	10.86	.64	6.86	8.21	5.38	6.13	7.03	7.96
Male	Mean	109.07	11.07	52.29	55.14	53.57	53.14	56.57	55.71
	SD	12.83	.71	7.19	8.79	5.06	7.12	5.29	8.34
Female	Mean	108.22	11.04	53.78	55.83	54.17	53.22	57.50	51.67
	SD	9.43	.58	6.72	7.98	5.74	5.45	8.27	7.39
School 2 N=44 (Open Space)	Mean	108.55	11.05	54.77	56.97	55.14	55.96	54.32	53.91
	SD	13.16	.48	8.24	8.52	8.72	8.42	10.58	8.66
Male	Mean	108.94	11.04	54.31	57.31	53.50	57.00	53.13	53.25
	SD	15.24	.49	6.69	9.40	10.55	10.32	11.01	7.98
Female	Mean	108.32	11.05	55.04	56.79	56.07	55.36	55.00	54.29
	SD	12.11	.48	9.11	8.14	7.53	7.27	10.47	9.15
School 3 N=38 (Traditional)	Mean	115.11	11.04	60.81	58.21	59.50	56.35	59.18	56.23
	SD	15.86	.54	6.32	9.03	6.13	6.64	7.80	8.61
Male	Mean	116.28	11.05	60.11	59.61	60.00	59.17	60.94	58.44
	SD	18.52	.55	6.83	8.94	6.65	5.69	9.10	9.86
Female	Mean	114.05	11.04	61.45	56.95	59.05	53.80	57.60	54.25
	SD	13.31	.49	5.94	9.16	5.75	6.52	6.22	6.97
F Ratios/School Comparisons (df=2,108)				*** 11.34	.81	** 6.33	2.02	* 3.07	1.04

*** $p < .001$
** $p \leq .01$
* $p \leq .05$

Note: Top row of figures for each category refers to mean; second row of figures for each category indicates standard deviation

Table 3

Average Residual Achievement (Observed Minus Expected) in Comprehension for Students in Different Settings

	GRADE					
	1	2	3	4	5	6
School 1 (Nongraded)	-3.89	- .05	- .63	-2.33	-1.32	-1.36
N=32						
Male	-4.04	-1.86	-2.68	-2.17	- .15	1.16
Female	-2.97	1.32	.16	-2.85	-1.90	-1.94
School 2 (Open Space)	- .30	- .45	- .11	.36	- .96	1.07
N=44						
Male	2.36	- .24	-1.97	- .52	2.30	- .05
Female	- .88	- .53	- .96	- .86	- .26	1.71
School 3 (Traditional)	3.62	.56	.65	1.54	2.23	- .11
N=38						
Male	2.87	.49	- .50	.93	3.43	.89
Female	4.30	.62	1.68	2.09	1.14	-1.01

Table 4

Average Residual Achievement (Observed Minus Expected) in Vocabulary for Students in Different Settings

	GRADE					
	1	2	3	4	5	6
School 1 (Nongraded)	-3.20	-1.47	-2.34	-2.22	.33	-1.11
N=32						
Male	-5.09	-1.82	-1.22	-1.67	- .58	- .61
Female	-2.55	-1.17	-2.08	-2.09	.28	-2.88
School 2 (Open Space)	-1.56	- .02	-1.11	.64	-2.40	- .64
N=44						
Male	-2.02	.31	-2.75	-1.69	-3.59	-1.30
Female	-1.29	- .21	- .18	.05	-1.72	- .26
School 3 (Traditional)	4.49	1.23	3.25	1.03	2.46	1.69
N=38						
Male	3.78	2.61	3.75	3.86	4.22	3.89
Female	5.12	- .05	2.80	-1.51	- .88	- .30

Questionnaire on Reading Practices

Directions: We are trying to get a description of how reading is taught in this school. Would you please read the the following 35 items and respond to each by describing how youngsters are generally taught throughout the school year.

1. Pupils remain with the same reading group throughout the year.

Always	Often	Sometimes	Seldom	Never
_____	_____	_____	_____	_____

2. Pupils remain with the same reading teacher throughout the school year.

Always	Often	Sometimes	Seldom	Never
_____	_____	_____	_____	_____

3. A scope and sequence guide of all reading skills constitutes the reading curriculum and is used to determine the developmental reading program for pupils' elementary schooling.

Always	Often	Sometimes	Seldom	Never
_____	_____	_____	_____	_____

4. The pupil's reading skill mastery rather than assigned grade level determine his instructional level.

Always	Often	Sometimes	Seldom	Never
_____	_____	_____	_____	_____

5. A pupil's instructional group based on the scope and sequence guide continum is determined by skill mastery and not grade level.

Always	Often	Sometimes	Seldom	Never
_____	_____	_____	_____	_____

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